

### AMENDMENT TO THE CLAIMS

This listing of claims will replace all prior versions, and listing, of claims in the application:

#### CLAIMS

**Claim 1 (Currently amended):** A method of determining ~~the~~ *in vivo* metabolism of one or more sugars or fatty acids in an individual, said method comprising:

- (a) administering ~~one or more compositions comprising~~ one or more  $^2\text{H}$ -labeled sugars or  $^2\text{H}$ -labeled fatty acids to an individual;
- (b) obtaining one or more bodily tissues or fluids at one or more times from said individual; and
- (c) detecting ~~the incorporation of said~~  $^2\text{H}$  produced from said one or more  $^2\text{H}$ -labeled sugars or  $^2\text{H}$ -labeled fatty acids ~~into~~ in water to determine the metabolism of said one or more sugars or fatty acids in said individual.

**Claim 2 (Currently amended):** The method according to claim 1, wherein said one or more ~~compositions~~ sugars comprise  $^2\text{H}$ -labeled glucose.

**Claim 3 (Currently amended):** The method according to claim 2, wherein said  $^2\text{H}$ -labeled glucose is ~~chosen~~ selected from the group consisting of  $[6,6\text{-}^2\text{H}_2]\text{glucose}$ ,  $[1\text{-}^2\text{H}_1]\text{glucose}$ , and  $[1,2,3,4,5,6\text{-}^2\text{H}_7]\text{glucose}$ .

**Claim 4 (Currently amended):** The method according to claim 1, wherein said one or more compositions are administered by a technique ~~chosen~~ selected from the group consisting of oral, gavage, intraperitoneal, intravascular, and subcutaneous administration.

**Claim 5 (Original):** The method according to claim 4, wherein said one or more compositions are administered orally.

**Claim 6 (Original):** The method according to claim 1, wherein said individual is a mammal.

**Claim 7 (Currently amended):** The method according to claim 6, wherein said mammal is ~~chosen~~ selected from the group consisting of humans, rodents, primates, hamsters, guinea pigs, dogs, and pigs.

**Claim 8 (Original):** The method according to claim 7, wherein said mammal is a human.

**Claim 9 (Currently amended):** The method according to claim 1, wherein said one or more bodily tissues or fluids are ~~chosen~~ selected from the group consisting of blood, urine, saliva, and tears.

**Claim 10 (Currently amended):** The method of claim 1, wherein said one or more bodily tissues or fluids are ~~chosen~~ selected from the group consisting of liver, muscle, adipose, intestine, brain, and pancreas.

**Claim 11 (Original):** The method of claim 1, comprising the additional step of partially purifying said water.

**Claim 12 (Original):** The method of claim 11, comprising the additional step of isolating said water.

**Claim 13 (Currently amended):** The method according to claim 1, comprising the additional step of measuring  $^2\text{H}$  incorporation or a ratio of  $^2\text{H}$  incorporation into one or more chemical compositions ~~chosen~~ selected from the group consisting of glucose, glycogen, glycerol-triglyceride, triglyceride fatty acid, proteins, and DNA.

**Claim 14 (Original):** The method according to claim 13, wherein said chemical composition is glucose.

**Claim 15 (Original):** The method according to claim 14, comprising the additional step of measuring endogenous glucose production.

**Claim 16 (Currently amended):** The method according to claim 14, comprising the additional step of measuring ~~the~~ a proportion of labeled glucose stored in tissue glycogen relative to said <sup>2</sup>H-labeled sugar administered.

**Claim 17 (Currently amended):** The method according to claim 14, comprising the additional step of measuring ~~the~~ a proportion or rate of administered <sup>2</sup>H-glucose undergoing glycolysis.

**Claim 18 (Original):** The method according to claim 13, wherein said chemical composition is glycogen.

**Claim 19 (Original):** The method according to claim 13, wherein said chemical composition is glycerol-triglyceride.

**Claim 20 (Original):** The method according to claim 19, comprising the additional step of calculating new triglyceride synthesis.

**Claim 21 (Original):** The method according to claim 13, wherein said chemical composition is triglyceride fatty acid.

**Claim 22 (Original):** The method according to claim 21, comprising the additional step of calculating new fatty acid synthesis.

**Claim 23 (Currently amended):** The method according to claim 13, comprising the additional step of calculating ~~the~~ a proportion or storage rate of labeled fatty acids stored in tissue relative to <sup>2</sup>H-labeled fatty acid administered.

**Claim 24 (Currently amended):** The method according to claim 1, comprising the additional step of calculating ~~the~~ a proportion or storage rate of administered <sup>2</sup>H-labeled fatty acids undergoing fatty acid oxidation.

**Claim 25 (Original):** The method according to claim 13, wherein said chemical composition is a protein.

**Claim 26 (Original):** The method according to claim 13, wherein said chemical composition is DNA.

**Claim 27 (Currently amended):** The method according to claim 24, comprising the additional step of calculating ~~the~~ a rate or amount of DNA synthesis.

**Claim 28 (Currently amended):** The method according to claim 1, further comprising calculating ~~the~~ a rate or total amount of incorporation of said  $^2\text{H}$  into said water.

**Claim 29 (Currently amended):** The method according to claim 13, further comprising calculating ~~the~~ a rate ~~of~~ or amount of incorporation of  $^2\text{H}$  into said one or more chemical compositions.

**Claim 30 (Currently amended):** The method according to claim 28, further comprising calculating ~~the~~ a rate ~~of~~ or amount of incorporation of  $^2\text{H}$  into said one or more chemical compositions.

**Claim 31 (Currently amended):** The method according to claim 1, wherein said water is detected by methods ~~chosen~~ selected from the group consisting of gas chromatography/mass spectrometry, liquid chromatography-mass spectrometry, gas chromatography-pyrolysis-isotope ratio/mass spectrometry, gas chromatography-combustion-isotope ratio/mass spectrometry, cycloidal mass spectrometry, Fourier-transform-isotope ratio (IR)-spectroscopy, near IR laser spectroscopy, and isotope ratio mass spectrometry.

**Claim 32 (Currently amended):** The method according to claim 1, wherein said detecting step ~~may be~~ is accomplished by detecting one part  $^2\text{H}$  in 107 parts water.

**Claim 33 (Canceled).**

**Claim 34 (Currently amended):** The method according to claim 1, wherein said ~~metabolism determination~~ determining of said metabolism is used as a surrogate marker for FDA approval of drugs.

**Claim 35 (Currently amended):** The method according to claim 1, wherein said ~~metabolism determination~~ determining of said metabolism is used for ~~the~~ clinical management of patients.

**Claim 36 (Canceled).**

**Claim 37 (Currently amended):** The method according to claim 1, wherein said ~~metabolism determination~~ determining of said metabolism ~~is chosen from~~ further comprises identifying individuals at risk for insulin resistance and diabetes mellitus.

**Claim 38 (Currently amended):** The method according to claim 1, wherein said ~~metabolism determination~~ determining of said metabolism further comprises diagnosing high-fat diet-induced obesity.

**Claim 39 (Currently amended):** The method according to claim 1, wherein said ~~metabolism determination~~ determining of said metabolism further comprises identifying individuals at risk for high-fat diet-induced obesity.

**Claim 40 (Currently amended):** The method according to claim 1, wherein said ~~metabolism determination~~ determining of said metabolism further comprises the step ~~chosen from~~ of monitoring the effects of interventions to prevent or reverse insulin resistance, diabetes mellitus and high-fat diet-induced obesity.

**Claim 41 (Currently amended):** The method according to claim 1, further comprising the ~~further~~ steps ~~chosen from~~ selected from the group consisting of diagnosing and treating wasting disorders.

**Claim 42 (Currently amended):** The method according to claim 1, further comprising the ~~further~~ steps ~~chosen from~~ selected from the group consisting of diagnosing and treating hypoglycemia.

**Claim 43 (Currently amended):** The method according to claim 1, further comprising the ~~further~~ steps ~~chosen from~~ selected from the group consisting of diagnosing and treating glycogen storage disease.

**Claims 44-66 (canceled).**